
Proliferative behavior of vaginal fibroblasts from women with pelvic organ prolapse.

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Public Summary:

Scientific Abstract:

OBJECTIVE: Pelvic organ prolapse (POP) significantly impacts quality of life of women, especially with advancing age. Cell proliferation is a critical parameter in both normal and pathophysiological processes. We sought to examine fibroblast proliferation in premenopausal women with and without POP and menopausal women with POP, and examine whether TGF-beta1, a fibroblast mitogen, could stimulate proliferation in vaginal fibroblasts from these populations. STUDY DESIGN: Vaginal wall biopsies were obtained from asymptomatic women (controls) and women with POP (cases). Fibroblasts were cultured from these tissues. Vaginal fibroblasts were treated with or without TGF-beta1. Cell proliferation rate (mitotic index) was measured with time-lapse dark-field microscopy. Cell mitosis was counted with ImageJ software after analysis of time-lapse images as Quick time movies. RESULTS: There was no significant difference in mitotic index throughout different time points of observation between premenopausal controls and cases of similar ages. However, a significant difference in mitotic index was seen between premenopausal and menopausal cases ($p=0.01$), with the menopausal group exhibiting significantly lower mitotic indices. When treated with different doses of TGF-beta1, premenopausal control fibroblast proliferation increased with 5ng/ml of TGF-beta1 compared to non-treated fibroblasts ($p=0.04$). TGF-beta1 stimulation did not affect fibroblasts from either premenopausal or menopausal cases. CONCLUSIONS: Vaginal fibroblast proliferation decreases with age and this association does not appear to be affected by the presence of pelvic organ prolapse. TGF-beta1 stimulation increased cell proliferation of premenopausal control fibroblasts. In contrast, there was no response seen in fibroblasts from premenopausal and menopausal cases.

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